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PHILOSOPHICAL TRANSACTIONS.

X. *An Account of the Dissection of an Hermaphrodite Dog.
To which are prefixed, some Observations on Hermaphrodites in
general.* By Everard Home, Esq. F. R. S.

Read March 7, 1799.

INSTANCES of animals being brought forth, whose organs of generation are preternaturally formed, sometimes occur, and have been commonly called hermaphrodites; this term, however, should be confined to those only in which there is a mixture of the male and female organs in the same animal.

Examples of this kind have been rarely noticed; they have been met with at very distant periods of time, and confined to too few species of animals, to afford extensive opportunities for collecting observations respecting them. To this cause must be attributed, the little information that has been acquired upon so curious and interesting a subject.

Monstrous productions, having a mixture of the male and female organs, and which deserve the name of hermaphrodites, appear to arise most frequently in neat cattle; they are now generally known, and have been called free-martins.

This compound animal attracted the attention of the late Mr. HUNTER; and a Paper of his, containing a description of the organs of generation of different free-martins, to shew that they are by no means uniformly the same, or partake equally of the parts belonging to both sexes, is published in the Philosophical Transactions, Vol. LXIX. To add to these dissections an account of similar formation of the organs of generation in a dog, is the intention of the present Paper. The subject having already been considered an object deserving the attention of this learned Society, is an inducement for bringing forward new facts, and observations which have been made respecting them.

The causes of monstrous productions of every kind are at present equally unknown, but it is highly probable that they are very similar; and, when once they have been brought into action, it would be reasonable to suppose, that the influence should be continued to several young, in succession; this is, however, by no means the case, for, of all the monstrous productions that have come under my observation, none of them have been either immediately preceded, or followed, by a monster of the same, or of any other kind.

In the neat cattle, the free-martin is most commonly met with where there are twins; one is a free-martin, and the other is always a perfectly formed male. In the human species, there have been instances of mothers having alternately a perfect and a monstrous child; so that these observations lead to the idea, that monstrous productions do not follow immediately upon one another; that they sometimes alternate; but are commonly, as in the child with the double head, (an account of which has been laid before this Society,) only one in a family, of which the others are perfectly formed.

From Mr. HUNTER's observations we learn, that in all the instances of free-martins which he examined, none had the complete organs of the male and female, but partly the one and partly the other, forming a mixture of both; and, what is deserving of notice, the ovaria and testicles, in all of them, were too imperfect to perform their functions.

There is much reason to believe, that no instance of an hermaphrodite, in the strict sense of the word, has ever occurred in the more perfect quadrupeds, or in the human species; for, when we consider the bones of the pelvis, to which the organs of generation are connected, it is difficult to conceive in what way the complete parts of the male and female could be placed, distinct from each other; and no instance of its having happened is to be found, in any record which can be depended upon.

As much has been said by authors, respecting hermaphrodites, particularly in our own species, and histories of them have a place even in the Philosophical Transactions, it may not be improper to explain the different kinds of monstrous production, which have been frequently mistaken for a complete mixture of male and female organs.

This inquiry into the subject of hermaphrodites, I shall pursue in the following order: first, examine into such malformations of the male, as led to the belief of the persons being hermaphrodites. Secondly, such malformations in the female, as have led to the same conclusion. Thirdly, such males as, from a deficiency in their organs, have not the character and general properties of the male, and may be called neuters. Fourthly, those in which there is a real mixture of the organs of both sexes, although not sufficiently complete to constitute double

organs; which I believe to be the nearest approach towards an hermaphrodite that has been met with in the more perfect animals; and, it is extremely in favour of this opinion, that every account I have met with in authors, may be referred to one or the other of these heads.

Baron HALLER, who has laboured this subject with his usual perspicuity, has collected in one point of view, the histories of reputed hermaphrodites, from almost every author that preceded him;* and his conclusions are in confirmation of what is now advanced.

In considering the malformations of the male organs of generation, which put on the appearance of both the male and female organs, I cannot better illustrate the description, than by taking up the cases mentioned in CHESELDEN: one is a Negro, the other is an European.

From an examination of the engravings of that work,† no superficial observer would harbour a doubt of their being complete hermaphrodites; and the opinion of Dr. DOUGLAS, which is annexed, in favour of the existence of the female organs, strengthens CHESELDEN's authority. In these cases, however, there is much reason to believe, that the parts were entirely those belonging to the male, only very much distorted by an imperfection of the scrotum, which was divided into two separate bags, with a deep slit between them, resembling very much the labia pudendi, and the opening into the vagina; over these, hung down the penis: the imperfection of the septum of the scrotum extended to the canal of the urethra. This is not unlike

* *Commentatio A. HALLER, de Hermaphroditis. Comment. Soc. Reg. Scient. Gottingensis.* (Tom. I.)

† CHESELDEN's *Anatomy of the Human Body*, 8vo.

the fissure in the hare-lip being continued through the bony palate, a circumstance often met with.

The under surface of the penis was attached, through its whole length, to the two bags containing the testicles, looking like a preternatural clitoris, to which it bore a more perfect resemblance, from the absence of the urethra.

The urine passed through a preternatural termination of the urethra in the perinæum, and came out externally, in the space between the testicles, which formed an enlarged aperture, that had been mistaken for a narrow vagina, in consequence of its allowing an instrument to pass to some distance, by conducting it to the bladder.

HALLER dissected a ram, in which the parts had been supposed to be those of an hermaphrodite. He found the animal to be a male, with the imperfections above mentioned; and, on comparing the dissection with many instances which have been stated by different writers, both in the human species and in quadrupeds, he considered them all to have been similar, in the conformation of the parts of generation.

Such malformation of the parts in the male, is particularly deserving of attention, as it is that which, more than any other, has been mistaken for a mixture of those of both sexes. It often occurs in different degrees of imperfection; and, in some instances, can be materially diminished by the assistance of the surgeon, although the greater number of cases are beyond the reach of art.

It may be supposed, that so great an imperfection in the structure of the penis, is necessarily attended with others in the more essential organs of generation; I shall therefore give an instance to the contrary. In a case of this kind, in which the canal was

continued to the external orifice at the glans penis, the deficiency of the urethra behind the scrotum was so great, that every attempt to close the aperture necessarily left in perinæo proved ineffectual; and, under these circumstances, the person married. When he had connexion, the emission was complete, which proved that the testicles were perfect; but the semen always passed out at the perinæum.

The late Mr. HUNTER was consulted, to remedy, if possible, this inconvenience, and enable the person to beget children. After the failure of several modes of treatment which were adopted, Mr. HUNTER suggested the following experiment. He advised that the husband should be prepared with a syringe fitted for the purpose, previously warmed; and that, immediately after the emission had taken place, it should be taken up by the syringe, and injected into the vagina, while the female organs were still under the influence of the coitus, and in the proper state for receiving the semen.

This experiment was actually made, and the wife proved with child. Upon a subject of this kind it is proper to speak with caution; but, from all the attending circumstances, no doubt was entertained by Mr. HUNTER, or the husband, that the impregnation was entirely the effect of the experiment.

SPALLANZANI's experiments on this subject, upon animals, were made several years after this proposal of Mr. HUNTER's had been attended with success.

In the female, there are two malformations of the organs of generation, which give an appearance to the external parts, tending to mislead the judgment respecting the sex. One is, an enlargement of the clitoris; which is stated by authors to grow to an immoderate size in warm climates, and to resemble

a penis. In cold climates, instances of this kind do not occur; and, even in hot countries, they are now rarely met with to such an extent. The accounts that have been given, we must suppose, are much exaggerated; for it is scarcely to be believed, that any enlargement which the clitoris is liable to, can give it a sufficient likeness to a penis, to be productive of any mistake.

The most remarkable instance of this kind, that has come to my knowledge, was a Negress, who was purchased by General MELVILLE, in the island of Dominica in the West Indies, about the year 1774. She was of the Mandingo nation, twenty-four years of age; her breasts were very flat; she had a rough voice, and masculine countenance. The clitoris was two inches long, and in thickness resembled a common sized thumb; when viewed at some distance, the end appeared round, and of a red colour, but, upon a closer examination, was found to be more pointed than that of a penis, not flat below, and having neither prepuce nor perforation; when handled, it became half erected, and was, in that state, fully three inches long, and much larger than before: when she voided her urine, she was obliged to lift it up, as it completely covered the orifice of the urethra. The other parts of the female organs were found to be in a natural state.

Dr. CLARK, who has favoured me with this account, from his own examination, mentions, that among the Negro women of the Mandingo and Ibbo nations, a large clitoris is very common; and, in several instances which came under his observation, in the course of his practice in midwifery, in the island of Dominica, the clitoris was an inch long, and thick in proportion; but attended with no other preternatural appearance.

The case above-mentioned, while it proves that the clitoris is sometimes of a very extraordinary size, also shews, that when so enlarged, it is unconnected with any mixture of the male organs.

The other malformation is a protrusion of the internal parts, which may be considered a prolapsus uteri, and therefore more a disease than an original malformation; it is probable, however, that if the parts had been perfectly formed, and acquired their due size, this change of their situation could not happen. The womb, thus displaced, has put on an appearance resembling a penis; and has been actually mistaken for one, even by medical men of character, who examined the parts.

The following case of this kind came under my own observation.

A French woman had a prolapsus uteri at an early age, which increased as she grew up; the cervix uteri was uncommonly narrow, and, at the time I saw her, (when she was about twenty-five years old,) projected several inches beyond the external opening of the vagina; the surface of the internal parts, from constant exposure, had lost its natural appearance, and resembled the external skin of the penis; the orifice of the os tincæ was mistaken for the orifice of the urethra. This woman was shewn as a curiosity in London; and, in the course of a few weeks, made four hundred pounds. I was induced by curiosity to visit her, and on the first inspection discovered the deception; which, although very complete to a common observer, must have been readily detected by any person intimately acquainted with anatomy. To render herself still more an object of curiosity, she pretended to have the powers of a male. As soon as the deception was found out, she was obliged to go away.

The history of an hermaphrodite is published in the XVIth Vol. of the Philosophical Transactions, which proves to be exactly similar to this, as is sufficiently ascertained by the menses flowing regularly through the orifice of the supposed penis. The French physicians were however so perfectly convinced of her manhood, that they made her change her dress, and learn a trade. To this she readily submitted; and the account says, she could perform very well the functions of a man, but not those of the other sex. This woman also was French.

It is probable, that the most common imperfection in the male organs of generation, is a defect in the structure of the testicle; that organ remaining in its foetal state, and never becoming fitted to perform its functions. When this happens, the person cannot be considered of the masculine gender, but of the neuter; having, properly speaking, no sex. Such persons, in their general external form, have neither the true character of a man, nor that of a woman. These neuters are more common than is generally believed: they vary in their external appearance; some being an exact medium between the male and female, and others having a greater resemblance to the one or the other sex; which bias may be the result of turn of mind, occupation, or other circumstances. Probably, only those whose form is very like females, attract the notice of common observers, so as to have their defects discovered.

The following instances of children with male organs having remained neuters, in consequence of the testes being imperfectly formed, and incapable of producing that influence on the constitution which stamps it with the character of the sex, have come under my own observation.

A marine soldier, aged 23, in the year 1779, was admitted a

patient into the Royal Naval Hospital at Plymouth, under my care. He had been there only a few days, when a suspicion arose of his being a woman, which induced me to examine into the circumstances. He proved to have no beard; his breasts were fully as large as those of a woman at that age; he was inclined to be corpulent; his skin uncommonly soft, for a man; his hands fat and short; his thighs and legs very much like those of a woman; the quantity of fat upon the os pubis, resembled the mons veneris; the penis was unusually small, as well as short, and not liable to erections; the testicles not larger in size than we commonly find them in the foetal state; and he had never felt any passion for women.

In this case, the testicles had been imperfectly formed, and the constitution was deprived of that influence which it naturally receives from them. In addition to this imperfection in the organs of generation, he was weak in his intellects, and in his bodily strength.

The two following cases, shew a still greater degree of imperfection in the male organs.

A woman near Modbury, in Devonshire, the wife of a day labourer, had three children: the first was considered to be an hermaphrodite; the second was a perfectly formed girl; and the third an hermaphrodite, similar to the first. Having heard this account, I visited the cottage, in the year 1779, and made the following observations upon the imperfectly formed children.

The eldest was thirteen years of age, of a most uncommon bulk, which appeared to be almost wholly composed of fat; his body, round the waist, was equal to that of a fat man, and his thighs and legs in proportion; he was four feet high; his breasts as large as those of a fat woman; the mons veneris loaded with

fat; no penis; a preputium one-sixth of an inch long; and under it the meatus urinarius, but no vagina. There was an imperfect scrotum, with a smooth surface, without a rapha in the middle, but, in its place, an indented line; it contained two testicles, of the size they are met with in the foetus. He was very dull and heavy, almost an idiot, but could walk and talk: he began to walk at a year and a half old.

The younger one was six years old, uncommonly fat, and large for his age; more an idiot than the other, not having sense enough to learn to walk, although his limbs were not defective. The external parts of generation differed in nothing from those just described, except in the prepuce being an inch long. He had a supernumerary finger on each hand, and a supernumerary toe on each foot.

It is curious that the mother of these two children, so like in their imperfections, should have had a perfectly formed child between them; and it leads me to mention, that the Polish dwarf, Count BORUWLASKI, who was in England in 1786, stated, that in his family the children had been alternately dwarfs, of which there were two, him and his sister; the intermediate child having grown to the common size.

The immense accumulation of fat, and the uncommon size of these children, accords with the disposition to become fat, so commonly met with in the free-martin.

The species of malformation of the organs of generation in which there is really a mixture of parts, or an evident attempt towards it, is less common than those we have mentioned. Mr. HUNTER has given several instances of it in the neat cattle, where the mixture of male and female organs was in different degrees. In two free-martins, imperfect testicles were found in

the situation of the ovaria; and, in a third, an appearance like both testicles and ovaria was met with, close together, in the situation of the ovaria. He also gives the dissection of an hermaphrodite ass; in which there were substances resembling both testicles and ovaria in the abdomen.

Mr. HUNTER never met with an instance of this kind in the dog; and I have not found one in any record which I have examined. I shall therefore state the following history of a case which has fallen under my own observation, as it proves, that a mixture of the generative organs sometimes occurs, in a species of animal in which it had not been before met with; and, as the dog is more domesticated than almost any other quadruped, the occurrence must be rare indeed, otherwise it could not have escaped notice.

A favourite dog of Lord BESSBOROUGH's, which had lived in the family for many years, was observed to have no teats, and never to have been in heat, although, to appearance, a perfectly formed bitch in all other respects: those circumstances being made known to Sir JOSEPH BANKS, he requested, that when the animal died, it might be sent to him. This happened last summer; and I had an opportunity of examining the organs of generation, which exhibited the following appearances. As they are represented in the annexed drawing, (Tab. IV.) it will be less necessary to be very minute in my description.

There was not the smallest appearance of teats on the skin of the belly; so that, in this particular, it differed both from the male and female; nor was there the least trace of any thing like the gland of the breast, under the skin. The clitoris was very large, being three-quarters of an inch long, and half an inch broad; the orifice of the meatus urinarius was unusually

large, as if it was intended for a common passage to the bladder and vagina; so that the external parts were only the clitoris, meatus urinarius, and rectum. Internally, in the situation of the ovaria, were two imperfectly formed small testicles, distinguished to be such by the convolutions of the spermatic artery; from these passed down an impervious chord, or vas deferens, not thicker than a thread, to the posterior part of the bladder, where they united into one substance, which was nearly two inches long, and terminated behind the meatus urinarius. The other parts of the animal were naturally formed. When the testicles were cut into, they appeared to have no regular glandular structure.

In this animal, the clitoris was the only part of the female organs that was completely formed. What rendered the parts a decided mixture of male and female organs was, the testes being in the place appropriated for the ovaria, and the ligamentous substance, to which the vasa deferentia were connected, somewhat resembling an impervious vagina. The clitoris, in this instance, could not be considered as an imperfect penis, since the bone, the distinguishing mark of the dog's penis, was wanting.

In HALLER's account of hermaphrodites, before mentioned, there is the history of a kid, in which there was a mixture of male and female organs, illustrated by an engraving. They were very similar to those of this dog: the imperfect testicles were in the same situation; but there was a pervious canal or vagina, that divided, like the uterus, into two horns, which extended to the testicles; there were also vesiculæ seminales. In the *Memoirs of the Royal Academy of Sciences of Paris*,* there is a

* For the year 1720.

very accurate description, by M. PETIT, of a similar mixture of organs in the human species. The person had wholly the character of a man, but was of a delicate constitution : he was a soldier, and died of his wounds. The appearance of the penis is passed over ; but the scrotum, not containing testicles, drew M. PETIT's attention ; and, in the dissection, he found testicles in the situation of the ovaria, attached to two processes, continued from an imperfect vagina, but having vasa deferentia, which passed, in the usual manner, to the vesiculæ seminales. The vagina communicated with the urethra, between the neck of the bladder and the prostate gland.

A case of mixed organs is mentioned in Dr. BAILLIE's *Morbid Anatomy* : the person was twenty-four years of age, had the breasts of a woman, and no beard. The clitoris and meatus urinarius had the natural appearance, but there were no nymphæ, and the labia pudendi were unusually pendulous, containing a testicle in each of them. The vagina was nearly two inches long, and terminated in a blind end. She never menstruated, and had a masculine appearance.

This appears to have been the reverse of the case mentioned by M. PETIT : in this, the external parts were those of the female, in which were contained the testicles ; while, in the other, the internal parts were those of the female, with the testicles attached to them.

There is still another mixture of the organs of the female with those of the male, which is probably the most rare in its occurrence ; this is, an hermaphrodite bull, probably a free-martin, partaking so much of the bull as to have the male organs capable of propagating the species, and an udder capable of secreting milk.

The glands which secrete milk, although in themselves not organs of generation, entirely belong to them, and form a part of the female character, sufficiently obvious to connect them intimately with the present subject.

That an animal not a perfect female, should have glands which secrete milk, or indeed that an animal truly female, without having had young, should give milk, is so extraordinary, that even written evidence respecting it requires confirmation to entitle it to credit; in this respect, the following fact must be considered as perfectly satisfactory.

An instance of an hermaphrodite bull, whose udder secreted milk, occurred lately in Poland. The animal came into the possession of Mr. BROOKES, who procured it near Grodno, in the year 1796, and carried it to St. Petersburg, where it died in the following year; unfortunately, no examination was made after death.

While the animal was at St. Petersburg, both Dr. ROGERSON and Dr. ROGERS had opportunities of examining it with a considerable degree of accuracy; and the following account is taken from their description, with which I have been favoured by Dr. ROGERSON, who is now in London.

The animal was under the usual size of neat cattle, and is stated by Mr. BROOKES to have been about fifteen years old; it was in a weakly state, and Mr. BROOKES told Dr. ROGERSON, that he had much difficulty in making it bear the journey from Grodno, (a distance of about 800 miles) and was obliged to give it the most nourishing diet, which was principally ground malt.

In its general appearance, the male character predominated, particularly in the head, horns, neck, shoulders, and organs of generation. The flanks and hind quarters had a greater resemblance to those of the cow.

The penis was of the ordinary size, and had the common appearance; the preputium had the tuft of hair at the orifice, as in the bull. The urine was ejected through the penis.

It had an udder in the common situation, which was smaller, and more globular, than that of the cow, and its teats were less pendulous. Dr. ROGERS found one of the testicles, by pressing upon the udder, but was unable to detect the other.

There was an external orifice in the situation of the vagina, but so small as not to appear capable of receiving more than the point of the fore finger. Dr. ROGERSON thinks, from its appearance, that it never could have admitted the male, much less have brought forth a calf, which had been asserted, but without any proof whatever. Mr. BROOKES, who is now in this country, admits that it had never received the male, or brought forth young, while in his possession; but asserts that it had several times covered the female, and had begot five calves. This assertion, Dr. ROGERSON thinks highly deserving of credit.

The udder contained milk capable of giving cream, but the quantity was very small. When Dr. ROGERSON was present, only an ounce could be procured; but he was told that at other times a tea-cupful was drawn. Mr. BROOKES states, that he once saw an English pint milked at one time.

As the teats of the bull are in the same situation as those of the cow, it became an object of inquiry, whether any males of that tribe of animals, that were not hermaphrodites, had ever been known to give milk; and I find there are two instances recorded in the Philosophical Transactions, of wethers having given suck.

One is upon the testimony of the Rev. Dr. DODDRIDGE, who

states that a lamb was nourished by the milk, and, when the teats were pressed, milk came out.*

The other is on the testimony of Mr. KIRKE, of Cookridge, in Yorkshire. He mentions, that Sir WILLIAM LOWTHER had a lamb suckled by a wether. The lamb sucked during the whole summer, and, after it was weaned, milk could be pressed from the teats: each side of the udder was the size of an hen's egg. This account is dated Sept. 28th, 1694. He gives a second relation, in November, stating that the udder was reduced in size, but there was still some milk in it, and no appearance of the animal being an hermaphrodite.†

A case is also recorded in the Philosophical Transactions, of a man giving suck to a child two months old;‡ this, however, is not stated with sufficient accuracy to allow any stress being laid upon it, although it would have been improper not to have noticed it in this place.

In considering the influence of the testicles upon the constitution of the male, which is rendered so evident by contrasting it with those cases in which the testicles are imperfect, it leads to a supposition, that the ovaria may have a similar influence upon the constitution of the female; and that, when the ovaria are imperfectly formed, or when testicles are substituted for them, although the external parts are decidedly female, the person may grow up, deprived of that feminine character which the constitution would have acquired, if the ovaria had been capable of producing their influence on the body. To this cause may be attributed the unnatural bias which some women have shewn, to pass through life in the character

* Phil. Trans. Vol. XLV. p. 502.

† Phil. Trans. Vol. XVIII. p. 263.

‡ Phil. Trans. Vol. XLI. p. 813.

of men. The circumstance of some women, after the time of breeding is over, (at which period the influence of the ovaria may be considered as lost to the constitution,) approaching nearer to the male in appearance, and acquiring a beard; also the female pheasant and duck,* in several instances, at the same period of their life, acquiring the feathers which distinguish the male, so as to be mistaken for males, is in favour of such an opinion.

The histories of monsters which have superfluous parts, as that of the child with the double head,† and all others of the same kind, lead to the opinion of two or more foetuses having been contained in one ovum, similar to two yolks in one egg; and that, from some circumstance having taken place in utero, certain parts of one of the foetuses were prevented from coming to perfection, and were absorbed; while those that remained became connected to the other foetus.

* The following account of a duck of this kind was sent me by Mr. RUMBALL, surgeon, at Abingdon, in Berkshire.

The duck was bred by Mr. CATOR, of Norwood, in Surrey, in the year 1781. It continued to lay, and to hatch its young, till the year 1789; when the curled feathers, peculiar to the drake, made their appearance in its tail. From this period, she not only left off laying, but frequently attempted to tread the other ducks, both in the water, and upon the ground; and they courted her in return. This was particularly observed on the 19th of August, 1791, when she trod a duck in the water, and fell off on her side, as drakes usually do; and they both began washing themselves immediately after, as is customary on these occasions. She never afterwards suffered a drake to come near her.

Although the plumage changed, the voice continued the same, which is very different from that of the drake. This circumstance first attracted Mr. RUMBALL's notice, and made him doubt of its being really a drake. On the 14th of October, 1793, at the request of Mr. RUMBALL, this duck was sent to Mr. HUNTER, and died on the 18th, two days after Mr. HUNTER's death. On examination, the organs of generation were those of a perfect duck. The skin is stuffed, and preserved in Mr. HUNTER's collection.

† Phil. Trans. Vol. LXXX. p. 296, and this Vol. p. 28.

Where monsters are imperfect, there is no difficulty in accounting for any organ, or other structure, not having been completely formed; but, that the ovaria should be wanting, and their place supplied by testicles, is not to be explained upon the same principle.

The testicles being substituted for the ovaria, and the ovaria themselves entirely wanting, is probably the most curious circumstance that is met with, in the structure of these hermaphrodites; and, as many important discoveries in the animal oeconomy have been suggested from the examination of monstrous productions, it naturally leads to the inquiry, whether there is any thing in the original formation of the parts, which can account for so strange an occurrence.

The only mode in which it can be explained, as far as I am able to judge, appears to be the following. By supposing the ovum, previous to impregnation, to have no distinction of sex, but to be so formed as to be equally fitted to become a male or female foetus; and that it is the process of impregnation which marks the distinction, and conduces to produce either testicles or ovaria, out of the same materials.

The following circumstances are in favour of this opinion. The testicles and ovaria are formed originally in the same situation, although the testicles, even before the foetus has advanced to the eighth month, are to change their situation, to a part at a considerable distance.

The clitoris, in foetuses under four months, is so large as to be often mistaken for a penis. Preparations to show the size of the clitoris at this age are preserved in Mr. HUNTER's collection; and M. FERRIEN mentions it, with a view to explain an erro-

neous opinion which prevailed in France,* that the greater number of miscarriages between three and four months, have been remarked to be males; which mistake arose from the above circumstance.

The clitoris, originally, appears therefore equally fitted to be a clitoris or penis, as it may be influenced by the ovarium or testicle.

In considering this subject, it is curious to observe the number of secondary parts, which appear so contrived that they may be equally adapted to the organs of the male or female.

In those quadrupeds whose females have *mammæ inguinales*, the males have also teats in the same situation; so that the same bag which contains the testicles of the male, is adapted to the *mammæ* of the female.

In the human species, which have the *mammæ pectorales*, the scrotum of the male serves the purpose of forming the *labia pudendi* of the female, and the *preputium* makes the *nymphæ*. The male has pectoral nipples, as well as the female; and, in many infants, milk, or a fluid analogous to it, is secreted; which proves the existence of a glandular structure under the nipple.

This circumstance, when added to the instances already related, of an hermaphrodite bull, and of wethers giving suck, affords a strong presumption that the rudiments of the *mammæ* exist in the male, and, in some few instances, have been brought to perfection, either by an original mixture of organs, early emasculation, or other changes with which we are at present unacquainted.

If it is allowed that the sex is impressed upon the ovum at

* *Mém. de l'Acad. Royal des Sciences de Paris*, 1767, p. 330.

the time of impregnation, it may in some measure account for the free-martin occurring when two young are to be impressed with different sexes, at one impregnation; which must be a less simple operation, and therefore more liable to a partial failure, than when two or any greater number of ova are impressed with the same sex. It may also account for twins being most commonly of the same sex; and, when they are of different sexes, it leads us to inquire whether the female, when grown up, has not in some instances less of the true female character than other women, and is not incapable of having children. It is curious, and in some measure to the purpose, that in some countries, nurses and midwives have a prejudice, that such twins seldom breed.

This view of the subject throws some light on those cases where the testicles are substituted for the ovaria; since, whenever the impregnation fails in stamping the ovum with a perfect impression of either sex, the part formed will neither be an ovarium nor a testicle, sometimes bearing a greater resemblance to the one, sometimes to the other; and may, according to circumstances, either remain in the natural situation of the ovaria, or pass into the situation proper to the testicle, whether it is the scrotum of the male, or the labia pudendi of the female.

EXPLANATION OF THE PLATE. (Tab. IV.)

The plate consists of two figures, which represent the anterior and posterior view of the organs of generation, in the hermaphrodite dog.

Fig. 1. The anterior view.

a The clitoris.

b The meatus urinarius.

c The bladder.

dd The testicles, and convolutions of the spermatic artery.

ee The impervious vasa deferentia.

Fig. 2. The posterior view.

aa The testicles.

bb The impervious vasa deferentia.

c The bladder.

d The union of the vasa deferentia, forming a substance which may be considered as an impervious vagina.

e The termination of the vasa deferentia at the neck of the bladder.

